PROVISIONAL INTELLIGENCE REPORT

PROJECT CONSTRUCTION IN COMMUNIST CHINA UNDER THE FIVE YEAR PLAN

CIA/RR PR-90
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CENTRAL INTELLIGENCE AGENCY

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(ORR Project 15.136)

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FOREWORD

The general purpose of this report is to survey the progress of project construction in Communist China under the Five Year Plan. The general background of the Five Year Plan and its achievements to date are reviewed, and the problems of industrial training in Communist China are considered. The significant features of the more important project constructions under the Five Year Plan are discussed. It must be stressed, however, that the listing of the plants is by no means complete, nor is the treatment of those discussed exhaustive. It is hoped that some time in the near future it will be possible to issue a Research Aid listing all the known construction projects in Communist China under the Five Year Plan, together with such pertinent data as date of completion, relative size and importance, manpower involved, and extent of Soviet aid, in order to provide a basis for preparing a preliminary estimate of the cost of plant construction.

This report has been coordinated within CIA, but not with other IAC agencies.

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Map

Communist China: Major Construction, Expansion, or Renovation Projects Under Way during the First Two Years of the Five Year Plan . . . . . Inside Back Cover

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PROJECT CONSTRUCTION IN COMMUNIST CHINA UNDER THE FIVE YEAR PLAN*

Summary

The Five Year Plan of Communist China officially began in January 1953. Peiping** apparently does not have a plan for the whole 5-year period and has proceeded by announcing new production goals from year to year. Exceptions have been made in the case of some individual construction projects, which are assigned target dates.

The Chinese Communists never would have been able to begin their present Five Year Plan after only 4 years in power without substantial support and commitments from the USSR involving technical and material aid. The USSR not only assisted Communist China in the formulation of its economic plans but also committed itself to help in the construction or renovation of 141 large-scale projects by providing both material and technical help. The 141 projects include large power stations; coal mines; oil refineries; iron and steel combines; and machine-building, automobile, and tractor plants. According to Hsueh Mu-chiao, member of the Chinese Communist State Planning Committee, these enterprises will all be in operation by 1959, at which time the output of the major industries in Communist China will approximate the level of industrial production attained by the USSR in 1932.

In 1953, Peiping stated that the main task of the Five Year Plan would be the development of heavy industry and the laying of "the foundations for the industrialization of the country and the modernization of national defense." In order to accomplish this goal, it was stressed that a great effort would have to be made in industrial construction.

* The estimates and conclusions contained in this report represent the best judgment of the responsible analyst as of 1 September 1954.
** In retaining the Chinese Nationalist name (Pei-p'ing, "Northern Peace") to refer to the capital of Communist China, this report follows current US practice. CIA maps, on the other hand, use the name Peking (Pei-ching, "Northern Capital") to which the Communists reverted when they adopted the city as their capital.

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The first year of the Five Year Plan had inauspicious beginnings, apparently because of poor and insufficient planning, as became evident in May, when the original 1953 production targets announced in February were considerably revised.

At the beginning of 1954 the Chinese Communists, still without a plan for the entire period 1953-57, announced their achievements for the past year and their goals for the second year of the Five Year Plan. According to official claims, the revised production targets for 1953 had been fulfilled, and investment in capital construction had taken up about one-third of total national budget expenditures. No specific production goals for the coming year were proclaimed at this time, but it was claimed that 70 of the newly built or expanded factories and mines would start operations in 1954. It was recently reported that 11 of the economic ministries had made favorable progress in basic construction during the first half of 1954.

The first phase of the Five Year Plan indicates that the Northeast (Manchuria)* will be industrialized first. The major construction projects in the ferrometallurgical, electric power, and machine-building industries are, for the most part, concentrated in this area. Very few of the target dates for project construction go beyond 1955, the third year of the Five Year Plan. If the Communists are able to meet these deadlines, they will have made very real progress in their industrialization program.

The most significant achievement in the first year and one-half of the current Five Year Plan in the iron and steel industry was the large-scale expansion of the An-shan Steel Plant to increase its production capacity by 80 percent for pig iron, by 73 percent for coke, and by 88 percent for rolled steel. The expansion of the An-shan steel center is having a stimulating effect on the growth of heavy industry throughout Communist China. It typifies the Chinese Communist policy of concentrating on the expansion and

* The names of geographic areas employed in this report are those of the Chinese Communist Administrative Divisions as of 1953 (see CIA map 12577, 2-53).

renovation of existing industrial plants rather than undertaking construction of an entirely new industrial center.

Other important projects included the renovation and expansion of the Ma-an-shan Iron Smelting Plant in Central and South China* to increase the output of pig iron for the consumption of Shanghai steel plants; the expansion of the Chungking Iron and Steel Plant to satisfy the needs of South and Southwest China for pig iron, steel plate, and light rails; the expansion of steel smelting facilities of the T'ai-yuan Iron and Steel Works for the production of various kinds of heavy machinery; and the completion of preparations for starting the first stage of the major expansion of the Ta-yeh Steel Plant in the spring of 1954. Geological surveys and explorations were still being conducted in the Pao-t'ou area of Suiyuan Province, in preparation for the construction and establishment of a large new steel center, comparable with that of An-shan. On 23 September 1954, Chou En-lai announced that capacity for production of iron and steel had been increased to such an extent that the 1954 goals had been set at 3.03 million metric** tons for pig iron and 2.17 million tons for crude steel.

The nonferrous metals industry conducted a concentrated program of geological survey and exploration to discover new ore deposits and apparently achieved some noteworthy success. In the field of new construction, Soviet technicians assisted in the renovation and expansion of production and refining facilities at the Ko-chiu tin mines, including the installation of a new ore-dressing plant capable of turning out 1,000 tons of ore per day. Progress also was reported in the mechanization and expansion of antimony and tungsten mining operations in Southwest China.

In the coal mining industry the major achievements include the increased mechanization of mining operations; the expansion of coal mine rail transportation facilities; the sinking of several vertical and inclined shafts; the completion of two large open-face mines at Fou-hsin; the expansion of the Fu-shun Coal Mine; and the renovation and expansion of several smaller mines throughout Communist China. As a result of the progress made thus far in expansion and mechanization, the 1954 goal for production of coal announced by Chou En-lai

* Central and South China is a single Administrative Division. See the map inside back cover.

** Throughout this report, tonnages are given in metric tons.

is 81.99 million tons, or 2.6 times the 1949 level of 31.53 million tons.

The principal achievements in the petroleum industry were the large expansion of the crude oil production and refining facilities of the Yu-men oil fields; the opening of new oil wells and construction of a new cracking plant in Sinkiang Province; the expansion of the Fu-shun No. 1 oil shale plant, and the rehabilitation of the Fu-shun No. 2 oil shale plant; the construction of an oil refinery in Shanghai; and the reported discovery of valuable oil deposits in Southwest China by prospecting teams equipped by the Soviet Bloc. As a result of the recent expansion of crude oil production facilities, the production of crude oil in Communist China is now estimated at about 500,000 tons per year.

The importance of the electric power industry in the industrialization program of Communist China is partially reflected in Chou En-lai's estimate that production of electricity would reach 10.8 billion kilowatt-hours (kwh) in 1954. Production in 1953 is estimated at 9.1 billion kwh. In order to meet the increasing demands for electric power, the Communists were scheduled to build or reconstruct and put into operation 24 thermal and hydroelectric stations in 1953-54. At present the more important part of the power reconstruction program is located in the Northeast. Some of the major power plants which have been restored or are being restored in that area include the Ta-feng-men Hydroelectric Plant, the Fou-hsin Thermal Plant, the Fu-shun Plant, the No. 4 Harbin Plant, and a plant in Dairen. In China proper the most important plant under construction is the T'ai-yuan Thermal Power Plant, which is scheduled for partial completion in 1955. Other smaller plants which have been constructed or are being constructed in that region include the Chengchow Plant, the No. 507 Plant in Chungking, the Sian No. 2 Plant, the Tientsin plant expansion, and the Ti-hua Plant in Sinkiang, all of which are thermal power plants.

The extent of geological explorations and surveys to discover new oil, coal, and ore deposits in the Northwest and Southwest is illustrative of Chinese Communist intentions to prepare for future industrial expansion in these areas. The extension of rail lines, construction of new industrial and power plants, and the expansion of existing iron and steel production facilities to service these areas are further indications of long-range planning for the industrialization of the hinterlands.

The large number of engineering industry construction projects provides for the future production of such commodities as heavy machine tools, automobiles, heavy mining machinery, precision and measuring tools, and large turbines and generators. These products are all vital to the industrialization program, and in many cases the increased capacity for production will furnish equipment which Communist China formerly had to import from abroad.

Production of metalworking machines in 1954, according to the recent speech of Chou En-lai, is expected to reach 13,513 units, or 8.5 times the level of 1949. The First Ministry of Machine Industry (FMMI), which controls most of the engineering industries in Communist China, will play a critical role in the industrialization of the country. A significant proportion of the "National Economic Construction" funds for industry is believed to have been allocated to the machine-building industry in 1953, and it was announced that a considerable number of the 141 plants which were to be constructed or expanded under the Five Year Plan would belong to the machine-building industry. Eight of the 10 large plants undergoing construction or expansion in 1953 were located in the Northeast. In Mukden alone, 4 plants were being enlarged: 1 modern machine tool plant, 1 heavy machinery plant, 1 pneumatic tool plant, and 1 electric wire and cable plant. In Harbin two new major plants were begun in 1953: a precision measuring and cutting tool plant -- the first of its kind in Communist China -- and an electrical machinery plant for the production of large- and medium-sized generators. Two other construction projects which are being started here this year are the Harbin Electric Meter Plant and the Harbin Boiler Plant. The Fu-shun Mining Machinery Plant is being expanded so that it will triple its present output. Perhaps the most important new plant in the Northeast is the No. 1 Automobile Plant at Ch'ang-ch'un, which reportedly will manufacture the first automotive vehicles produced in Communist China, at a planned rate of 30,000 a year. There are three important construction projects in North China: the T'ai-yuan Heavy Machinery Plant, which is scheduled for completion in 1955; the Ching-wei Textile Machinery Plant, which was recently completed; and a machine tool plant in Peiping, on which work is scheduled to begin. At Hsiang-t'an, in Central and South China, an electrical machinery plant and an electric wire plant are reportedly under construction, and a modern lathe factory was in the planning stage in 1953. The Ch'eng-tu Railroad workshop in Southwest China and the Shih-yeh Automobile and Assembly Plant in Sinkiang, Northwest China, were both completed in 1953. The construction program of Communist China

is aimed at developing heavy industry and railroads first.

The Chinese Communists constructed 589 kilometers of new railroad lines in 1953 and expect to raise this rate as the Five Year Plan progresses. Most of the new lines under construction or survey are in Southwest and Northwest China. The two main lines presently under construction are the Ch'eng-tu - Pao-chi and the Lan-chou - Sinkiang lines. The former will connect the Southwest with the Northwest, presently isolated and undeveloped, and the latter will eventually give Communist China a strategic rail link with the USSR via Sinkiang. One of the major construction projects affecting railroads under the Five Year Plan is the building of the great Yangtze River bridge, which will speed north-south rail traffic and aid in the industrialization of Central and South China.

Notable achievements in the chemical industry include the expansion of the Dairen Chemical Combine (Dairen Chemical Plant and the Dairen Soda Plant); the restoration and expansion of the Chin-hsi Chemical Plant by the addition of a chlorine plant, a mercury-electrolysis plant, and a new carbolic acid plant; the expansion of the Yung-li Chemical Works in Nanking by the construction of a new sulphuric acid plant and the enlarging of the synthetic ammonia plant, where production of ammonium sulphate fertilizer should increase to about 72,000 tons per year; the construction of additional fertilizer and sulphuric acid plants; and the construction and expansion of pharmaceutical plants in the Northeast and East China.

The Chinese Communists, aware that their construction program will require increasingly large quantities of cement, have made strenuous efforts to increase production of this basic commodity. According to the recent speech of Chou En-lai, production in 1954 is expected to amount to 4.73 million tons, or 7.2 times the level of 1949. In order to maintain the increased production of cement, Peiping is reconstructing some of the cement plants in the Northeast which were stripped by the USSR in 1945. One of these plants, the Northeast No. 8 Plant, was finished last September, and reconstruction work was scheduled to begin on the Harbin Cement Works in April 1954. Since 1949 the Chinese Communists have reported that six factories have been completed or are under construction in China proper, most of them in the Northwest. Some of the locations at which cement plants have been built or expanded are Canton, Chungking, Yung-teng, Tsao-t'ang, Lan-chou, and Ti-hua. Because of the growing need for cement, it is believed that more and more plants will be

built or reconstructed both in the Northeast (Manchuria) and in China proper.

The chief accomplishment in the textile industry was a shift in the focus of textile production from the coastal areas to the interior. The construction of the new Ching-wei textile machinery plant in T'ai-yuan will provide many of the machines and most of the equipment needed for the construction and expansion of several new textile plants throughout Communist China. In the past year and a half, new construction was started and, for the most part, was completed on 8 cotton mills, 2 silk mills, 3 woolen mills, 2 flax mills, 3 gunny sack plants, and 6 dyeing and printing plants.

The shortage of qualified technical personnel has emerged as one of the most serious weaknesses of the Chinese Communist program for development of heavy industries under the Five Year Plan. As a result, the Chinese Communists have adopted four types of remedies to counteract this situation -- reorganization and expansion of technical educational facilities, increased emphasis on training workers on the job, increased reliance on Soviet technical supervision and assistance, and increased utilization of technical training facilities in the USSR for qualified Chinese Communist students and workers. Because of the relatively long period of time, study, and training required to produce a qualified industrial technician or engineer, however, it appears unlikely that Communist China will acquire a sufficient skilled labor pool before the end of the current Five Year Plan.

I. Five Year Plan.

A. Background and Beginnings.

The State Planning Committee (SPC), which is the highest level planning agency in Communist China and which is directly responsible to the Government Administrative Council, was established in November 1952. 1/* Before this time the beginnings of national economic planning had been managed by the Central Planning Bureau of the Committee of Finance and Economics. 2/ Comparatively little

* Footnote references in arabic numerals are to sources listed in the Appendix.

is known of the Central Planning Bureau except that in 1950 it was reportedly drafting a nationwide plan for 1951 and was in the process of outlining the first Five Year Plan of Communist China. 3/

The actual programing of the Five-Year Plan evidently began officially with the formal establishment of the State Planning Committee at the 19th Central People's Government Council meeting held on 15 November 1952. This organization, besides being charged with economic planning in Communist China, apparently also had the important responsibility of checking plan fulfillment. 4/

The composition of the SPC membership as announced at the time of the Committee's formation indicates the importance of this organization in the eyes of the Peiping regime. All of the 17 members of the SPC are Chinese Communist Party Members. (Non-Communists participate in many of the other major Chinese Communist government organs). Thirteen of the 17 are members of the Party's Central Committee; 3 are members of the Politburo; and 2 are vice-chairmen of the People's Revolutionary Military Council, which controls the armed forces. 5/ Kao Kang, who was appointed Chairman of the State Planning Committee, occupies among other posts that of Deputy Chairman of the Central People's Government and Chairman of the Northeast People's Government.* Other appointments included Teng Tzu-hui, a member of the Finance and Economics Committee; Chen Yun, former Minister of Heavy Industry; Li Fu-chun, a vice-chairman of the Finance and Economics Committee; Po I-po, former Minister of Finance; and Hsueh Mu-chiao, Chief of the State Bureau of Statistics.

It should be noted that on 17 August 1952, approximately three months before the establishment of the SPC, an important delegation headed by Chou En-lai arrived in Moscow for lengthy talks, a considerable part of which centered about Peiping's program for industrial modernization. 6/ Here again the composition of the delegation was significant, for it included Sung Shao-wen, Chief of the Central Planning Bureau; and two subsequent members of the SPC, Li-Fu-chun and Ch'en Yun. These same three individuals, together with several others, remained on in Moscow for extensive negotiations on the working level until about the middle of December 1952. 7/

* Kao Kang has been absent from public view since early 1954. He was not present at the important meeting of the Chairmen and Deputy Chairmen of the Central People's Government in June nor at the meeting of the Northeast Administrative Committee in July.

In February 1953, Po I-po, then Minister of Finance and a member of the SPC, acknowledged the Soviet aid in establishing the necessary systems for planning for the formulation of annual and 5-year plans. 8/

Another significant development in regard to economic planning occurred with the formation of the State Statistical Bureau (SSB), which was established largely to facilitate the drafting of the Five Year Plan. This organization is attached to the Finance and Economics Committee and is responsible for directing and supervising statistical work and statistical units at all administrative levels. 9/ The director of the SSB is a member of the State Planning Committee and the Finance and Economics Committee. 10/ Because any type of planning must depend upon a great volume and flow of statistical information from all sectors of the economy, it is self-evident that the State Planning Committee must rely heavily upon the State Statistical Bureau.

B. First Year -- General Goals and Achievements.

During the first half of 1953, the first year of the Five Year Plan, there were several official announcements concerning goals for the year. Peiping has announced the fundamental tasks of the Five Year Plan as follows: "To concentrate our main strength, first of all, on developing heavy industry, and lay the foundations for the industrialization of the country and the modernization of national defense." 11/ No plan for the whole 5-year period 1953-57 was announced, and this was understandable, since, as the year progressed, it became evident that the Chinese Communists were unable to fulfill their original plans even for 1953. Some general figures for the number of construction projects to be built were announced, and it was stated again and again that one of the main objectives of the Five Year Plan was the construction of a heavy industrial base.

On 24 December 1952, Chou En-lai, speaking on behalf of the Central Committee of the CCP, officially referred to the Five Year Plan for the first time when he announced that the "First Five Year National Construction Program" should be initiated in 1953. 12/ The targets for the first year of the Five Year Plan were officially announced on 4 February 1953 by Chou En-lai, who presented what appeared to be an overly ambitious program. Besides announcing specific goals for 1953 for agricultural and industrial production,

expressed as percentage increases over 1952, Chou En-lai stressed the fact that a large effort would be made in industrial construction. 13/

The excessively ambitious production goals announced in February for the first year of the Five Year Plan were apparently revised soon thereafter, for less than three months later, on 7 May 1953, Chia To-fu, a vice-chairman of the Finance and Economics Committee, officially announced production goals for 1953 which clearly indicated that most of the target figures had been reduced. 14/ Then the original goals were re-established in September with the exception of copper and machine tools, for which the reduced goals were maintained. It will also be noted that the cement goal was the only one to have been revised upward in May. The various periodic revisions shown in the following table appear to be symptomatic of inadequate and unrealistic planning.

Revisions of Selected Production Goals of Communist China
1953

1952 = 100

Commodity	February 15/	May 16/	September 17/
Pig Iron	114.0	113.3	114.0
Steel Ingots	123.0	122.1	123.0
Copper	139.0	128.6	128.6
Electric Power	127.0	118.3	127.0
Crude Oil	142.0	129.1	142.0
Coal	100.0	N. A.	97.8
Machine Tools	134.0	104.6	104.6
Cement	117.0	129.7	129.7

Chia To-fu, in the same speech of 7 May, stressed the fact that the basic task of the first Five Year Plan consisted of building a heavy industry to serve as the foundation for industrialization. He also stated that total capital investment by industrial departments during 1953 would be 150 percent above the figure planned for 1953. 18/

More specific information on the extent of the industrial construction program under the Five Year Plan was released in September 1953, when Li Fu-chun reported to the CPG Council on the results of the negotiations between Chinese Communists and Soviet representatives in Moscow. He stated that, besides those enterprises which had been planned in conjunction with the Russians over the past 3 years, Soviet aid would have been given, by the end of 1959, in the construction and renovation of 141 large-scale projects, including projects which would produce iron and steel, metals, autos and tractors, machines, and power. 19/ At the same time the Soviet press announced: "The scope of the tasks for the first /Chinese/ Five Year Plan may be described by the fact that in 1953 alone reconstruction and building is scheduled for 21 metallurgical and chemical plants, 24 large machine building plants, 24 thermal and hydroelectric stations and railroad lines with an over-all distance of more than 600 kms." 20/ According to Hsueh Mu-chiao, member of the Chinese Communist State Planning Committee, the enterprises being built under the "Soviet aid" program will all be in operation by 1959, at which time the output of the major industries in Communist China will approximate the level of industrial production attained by the USSR in 1932. 21/

By the end of 1953 there was still no announcement of a detailed program for the whole of the remaining 4-year period, presumably because the Chinese Communists did not have one formulated. Some of the general industrial achievements for the first year of the Five Year Plan, as announced by the Chinese Communist press in a New Year editorial, were: (a) investment in capital construction took up about one-third of the total national budget expenditures, covering 130 important construction projects; and (b) on a preliminary estimate, the total value of industrial production in 1953 was 104 percent of the State Plan. It was stated that this represented an increase of more than 30 percent over the total value of all industrial production for 1952. 22/ These last two claims should be accepted with reservations, since there were revisions in economic plans during 1953, and it is unclear as to just what this reported 30-percent increase represents.

C. Second Year -- General Goals and Achievements.

The same editorial which listed the accomplishments for 1953 23/ also stated the Chinese Communist objectives for 1954. (1) Nearly 70 newly built or expanded factories and mines would

start operation in 1954. (2) More capital construction projects were included in the 1954 Plan than in the 1953 Plan and in 1954 the State would concentrate its main effort on the building of heavy industry and railroads. (3) On the basis of the 30-percent increase in 1953 in the total value of industrial production, the industrial production goal for 1954 "must be about 17 percent above that of 1953."

As 1954 progressed, more statements were made in the Chinese Communist press stressing the need for the development of heavy industry first, in imitation of the Soviet First Five Year Plan. It was also emphasized that the "present specific task in developing heavy industry in our nation is to insure the completion of the 141 projects" in the construction of which the USSR had promised assistance. 24/

It was recently reported that 11 of the economic ministries had made favorable progress during the first half of 1954. Previously, on 1 May 1954, a Chinese Communist press report had stated that the "basic construction plans of the various ministries of the Central People's Government were carried out relatively well during the first quarter of 1954," and it was noted that this was a great improvement over the same quarter of 1953. 25/ According to the National Bureau of Statistics, during the first quarter of 1954, 10 ministries fulfilled 13.8 percent of the 1954 basic construction plans. In the first quarter of 1953, by comparison, the various ministries had only fulfilled 8.2 percent of the annual basic construction plans. It was further stated that, because of the wider scope of basic construction plans in 1954, the amount of work completed by the various ministries in the first quarter of 1954 was actually over 114 percent greater than that completed in the same quarter of 1953. One of the reasons given for the greater progress in 1954 was more realistic planning and the higher degree of concentration of capital investments on some projects. For example, it was stated that more than 50 percent of the total investments of the 10 ministries was for projects which cost more than 100 billion yuan (approximately US $4 million). 26/

II. Progress of Industrialization.

A. Iron and Steel.

In 1953 the production capacity of the iron and steel

industry in Communist China was expanded considerably, as a result of concentrated Sino-Soviet efforts to establish a heavy industrial base, from which the current and all subsequent Five Year Plans are to be projected. The major emphasis was in the Northeast, with An-shan as the focal point. Other iron- and steel-producing areas which underwent expansion were, in the North, the T'ai-yuan Iron and Steel Works and the Tientsin Steel Company; in the East, the Ma-an-shan Iron Smelting Plant; in the Central and South, the Ta-yeh Steel Plant; in the Southwest, the Chungking Iron and Steel Co. In Inner Mongolia, geological survey of iron deposits at Pao-t'ou apparently warrants the establishment of a large steel center there.

At the An-shan Iron and Steel Works in Northeast China, the following new plants were completed and put into operation in 1953: 2 automatic blast furnaces (Nos. 7 and 8), a seamless steel tubing mill, a heavy steel rolling mill, 2 coke oven furnaces, and 6 small iron casting furnaces. These new plants increased Chinese Communist production capacity by 80 percent for pig iron, by 73 percent for coke, and by 88 percent for rolled steel. 27/ The new heavy rolling mill can supply enough heavy steel rails for the laying of 2,200 miles of single-track line per year, while the new tube mill is supplying seamless tubes for geological prospecting and manufacturing machinery in Communist China. Among the major projects to be completed and put into operation this year will be an automatic sheet steel plant (first of its kind in China), which was begun in 1953; another automatic blast furnace of the same size as the two finished in 1953; two coke ovens; and 300,000 square meters of housing. Its output of iron and steel products is expected to be double or triple the 1953 output. 28/

In North China the T'ai-yuan Iron and Steel Works underwent the following new construction and expansion in 1953: a new steel-smelting workshop was constructed and has begun the manufacture of various kinds of heavy-loading and quick-vibrating machine axles and wheels, fly-wheels, and high-grade steel alloy materials such as solid alloy knives for high-speed cutting (a 70-ton movable lathe was installed in this plant and increased the steel-smelting capacity of the plant by 20 percent 29/); a sheet steel mill was constructed and was equipped with several pieces of Soviet heavy machinery, including a 30-ton grinder to make rollers for silicon sheet steel. 30/ In addition, two small blast furnaces were overhauled. 31/ The Tang-shan Steel Mill was expanded so that steel ingot production was increased by 58 percent over 1952. 32/ The Tientsin

Steel Company reported the construction of a new steel tape plant 33/ and a new heavy rolling workshop. 34/

In East China the Ma-an-shan Iron Smelting Plant completely renovated and put into operation six of its ten 20-ton blast furnaces. 35/ Pig iron production of this plant is now expected to satisfy 50 percent of the pig iron needs of the Shanghai steel industry.

In Central and South China, initial planning was completed to develop Ta-yeh into the second largest steel center in Communist China. A recent extensive geological survey of the two major iron mines at Ta-yeh revealed the existence of large deposits of top-quality hematite, which can be extracted by opencast mining, since most of this high-grade ore is at ground level or just below the surface. 36/ In 1953, rail and highway transportation facilities leading to the mining district were improved. In addition, five factories -- including a cement factory, a brick factory, and a foundry -- were under construction in this area. 37/ The first page of the major expansion of the existing steel plant was begun this spring, and is expected to be completed by the end of 1955. It will include the installation of an open-hearth furnace for smelting steel, and an electric furnace, a rolling shop, a forging shop, a shop for installing large-scale pneumatic hammers, a hydraulic press, and several electric motors. All of these facilities and equipment are to be new and much larger than those now in operation. 38/

In Southwest China the Chungking Iron and Steel Company concentrated on increasing its production capacity of steel ingots and in preparing for the expansion of its rolling mill to increase the output of light rails for forest lands and mines. Soviet technicians assisted in completing the construction of the Chungking No. 101 steel plant, the largest steel smelting furnace in Southwest China. 39/ In the first quarter of 1954, two new open-hearth furnaces were installed, 40/ and the No. 1 open-hearth furnace and the No. 1 electric furnaces were overhauled in the Chungking No. 101 steel plant. The No. 3 electric furnace of the Chungking No. 102 steel plant was also overhauled. 41/ As a result of this expansion and renovation of plant facilities, the Chungking Iron and Steel Company is now planning a 20-percent increase in pig iron output, a twofold increase in steel output, a tenfold increase in steel plate output, a fivefold increase in light rail output, and

a 69-percent increase over 1953 in the production of steel bearing plates for rails. 42/

In Inner Mongolia, large-scale geological explorations have resulted in the discovery of large deposits of high-grade iron ore near Pao-t'ou. The quality and quantity of these deposits apparently warrant the construction of a new steel center in this area, especially in view of its location near the 815-kilometer Peiping - Pao-t'ou Railroad, along which lies the richest coal basin in Communist China, the Ta-t'ung Coal Mines. 43/ Present plans envisage a probable extension of a 90-mile rail line northward from Pao-t'ou to the Pai-ling-miao Iron Mine; a more intensive geological survey of possible iron deposits closer to Pao-t'ou and the construction of a modern thermal power plant and about 15 factories to provide metal parts, firebricks, and oxygen for industrial purposes. 44/ In view of the extensive preparations required for the construction and establishment of a large new steel center, and in view of other heavy industrial commitments, it is quite probable that this ambitious plan will not be fulfilled during the current Five Year Plan.

On 23 September 1954, Chou En-lai announced that capacity for production of iron and steel had been increased to such an extent that 1954 goals had been set at 3.03 million tons for pig iron and 2.17 million tons for crude steel. 45/

B. Nonferrous Metals.

In 1953 the Ministry of Geology conducted a concentrated program of topographic and geological surveying to discover new and assay old sources of nonferrous metal deposits. This work was carried on primarily in Southwest, Central and South, and Northeast China, since most of the country's nonferrous resources are located in these areas.

In the Southwest, which contains 70 percent of the copper deposits and 93 percent of the tin in Communist China, the most important construction project undertaken was at the Ko-chiu Tin Mine, which is the largest tin producer and supplies about 80 percent of total tin output in Communist China. 46/ Soviet technicians assisted in the renovation of the furnaces and other equipment in the refinery, as well as in the construction and installation of a large, modern, mechanized ore-dressing plant, which is capable of treating 1,000 tons of ore a day. 47/ In addition, a 28-mile-long overhead

conveyor and a new thermal power plant with two generators were put in operation before the end of 1953. 48/ As a result of these innovations the output of the Ko-chiu Tin Plant is expected to be doubled by the end of the current Five Year Plan, and could yield about 15,000 tons to 20,000 tons of tin concentrate per year. 49/ This year 10,000 members of prospecting and drilling teams are searching in other areas of Yunnan Province for more accurate data on the rich tin, copper, and cobalt resources of this region. Thousands of tons of mining, drilling, and exploration equipment are being shipped into this area from An-shan, Shanghai, and Tientsin. 50/ Also in the Southwest, in Kweichow Province, Soviet geologists assisted in the discovery of a large mercury mine. 51/ In Sikang Province a copper mine was opened up and made ready for exploitation, and a light railway was under construction at one of the asbestos mines. 52/ Since mercury and copper are both in short supply throughout the Soviet Bloc, it is probable that Communist China is now endeavoring to attain self-sufficiency in both these metals. By 1957 it is estimated that production will be 4,500 flasks of pure mercury (76 lbs. each) and 16,000 tons of copper per year. 53/

In Central and South China the antimony mines in Hunan Province — which furnish more than 90 percent of the country's antimony production — were made more efficient by the installation of underground mechanical ventilation equipment, a water drainage system, electrically driven winding engines and shuttle cars, loading machines, and other types of mining machinery. As a result, 85 percent of the work at the antimony mine in Hunan Province is now done by machine, thus greatly expanding the mine's output. 54/ By 1957 it is estimated that output of antimony concentrate in Communist China will be at least 16,000 tons per year. 55/ Also in the Central and South, the tungsten mines in Hunan and Kwangtung Provinces are undergoing considerable mechanization, as a result of imports from the Soviet Bloc of several thousand tons of mining and drilling equipment. Three mechanized ore-sorting plants are under construction at the Yao-kang-hsing tungsten mines in Hunan, which, when completed, will provide a daily output of 250 tons of tungsten ore. In addition, a 40-km highway is under construction from these tungsten mines to the Pai-shih-tu railway station, in order to speed up the movement of tungsten ore from the mine to the consumer. 56/ In Kwangtung, Soviet technicians aided in the installation and operation of a new tungsten refinery at the Shih-hsing mines. 57/ As a result of these improvements in the extraction and refining of tungsten, it is estimated that by 1957 output of tungsten concentrate by Communist China will be at least 20,000 tons per year. 58/

In the Northeast the major emphasis was on geological surveying of an area of 31,000 square kilometers extending from Hei-lungchiang Province to Jehol Province. New copper, lead, zinc, and tungsten deposits were discovered and are now being investigated to ascertain their exact size and quality. 59/ In Fu-shun, preparations were underway for the expansion of the aluminum plant, which, when completed, is estimated to be capable of producing 60,000 tons of aluminum (including about 12,000 tons of refined metal) per year by 1957. 60/

C. Coal.

The most significant achievements in the coal industry in Communist China during the first year and a half of the current Five Year Plan have been increased mechanization of mining operations; expansion of coal mine rail transportation inside, to, and from the coal mines; the sinking of several vertical and inclined shafts; completion of two large open-face mines; and renovation of many other mines throughout the country. In 1953, 39 engineering companies were engaged in the construction and renovation of 33 old and new mine development projects, located principally in North and Northeast China. 61/ According to Chou En-lai's speech of 23 September 1954, the 1954 goal for production of coal is 81.99 million tons, or 2.6 times the 1949 level of 31.53 million tons. 62/

In the Northeast, two large open-face coal mines were put into operation in 1953 at the Fou-hsin Coal Mines, thus completing the first stage of construction of one of the country's most modern, largest, mechanized coal mines. Yearly production is expected to be sufficient to create 4.3 billion kilowatts of electricity (estimated 4.3 million tons of coal). 63/ This year, large-scale construction is continuing at these mines, and includes the building of four machine shops, a coal dressing plant, a stocking plant, an electric power substation, and a permanent railway network. 64/ Also in the Northeast the expansion of the Fu-shun Coal Mines, the largest coal producer in Communist China, was started in 1953 and will be completed by the end of 1957, in order to satisfy increasing industrial coal requirements. 65/ The present production capacity of the mines will be doubled by the opening of 64 new working faces and the construction of underground mining transportation and machine shop facilities. 66/ Other significant achievements in the Northeast include the completion of 5 new mechanized vertical and 4 inclined shafts in the Hao-kang, Chihsi, Shuangya, Pen-ch'i, and Sian mining bureaus. 67/

In North China the Kailan Coal Mines (second largest in Communist China) completed mechanization of over one-half of its underground mining facilities. Equipment now in use in these mines includes coal combines, coal cutters, electric drills, pneumatic drills, and picks. 68/ By the end of the current Five Year Plan, the annual production of these mines will be double the output in 1953, as a result of the sinking of eight new shafts this year and next. 69/ In Shansi Province the Ta-t'ung Coal Mines (largest bituminous mines in China) completed several projects for the construction of coal pit foundations which, when completed in 1955, will increase production capacity by 174 percent over the level of 1953. 70/

In East China, 3 new pairs of coal shafts are to be built this year, while 4 old pairs will be renovated. 71/ Much of this construction work will be centered in the Huainan Coal Mines (largest in East China), which are to supply coking coal to the Ta-yeh Steel Plant, which is now being expanded. 72/

In Central and South China a mechanized coking coal pit will be built in the P'ing-hsiang Coal Mines, and four anthracite pits will be constructed in the Chiao-tso coal mines this year. When these 5 new pits are put in operation, coal output in these 2 largest coal fields in Central and South China will be increased by 400,000 tons per year. 73/

In the Northwest one pair of new vertical coal shafts will be sunk and another pair will be reconstructed at the Tung-ch'uan Coal Mine, north of Sian in Shensi Province. Two pairs of inclined shafts are to be reconstructed at another coal mine in Akanshen, north of Lan-chou in Kansu Province. When these coal shafts are put into operation, the output of these 2 mines will be 3 times larger than that of 1953. 74/

D. Petroleum Industry.

During the first year and a half of the Current Five Year Plan, the Ministry of Fuel Industry sent over 230 field teams into Northwest, Southwest, and Northeast China to conduct geological and geophysical oil prospecting, surveying, and drilling over a total area of 120,000 square kilometers. New Soviet and Rumanian drilling rigs are now being used much more extensively to sink test wells more than 2,000 meters deep. In addition, several Soviet and

Rumanian drilling teams are assisting in this extensive search for more petroleum deposits. 75/

In the Northwest the crude oil production of the Yu-men (Lao-chun-miao) oil fields is being doubled (from an estimated annual production of 200,000 tons in 1953 to about 400,000 tons in 1954), 76/ so that annual crude oil production in Communist China will have increased by about 50 percent, from an estimated 340,000 tons in 1953 77/ to about 500,000 tons in 1954. About 46 percent of the crude oil produced at Yu-men is to be shipped eastward by truck to Lan-chou and then by rail to refineries in Northeast China (No. 7 petroleum refinery in Dairen) 78/ and in Shanghai. For this purpose a new oil pipe line, 5 kilometers in length, is being installed, and the number of tank trucks used to transport crude oil from Yu-men to Lan-chou is being increased fourfold as compared with 1953.* The crude oil refining capacity at Yu-men is expected to be increased 26 percent -- from an estimated 150,000 tons in 1953 to about 190,000 tons in 1954 -- by the addition of new equipment to the cracking plant. A diesel oil separating plant, a machinery plant, and a power plant have also been put into operation. Four times as many new wells are expected to be put into production this year as in 1953, thus necessitating the construction of 6 new oil storage tanks and the renovation of 1 old one. 79/

Also in the Northwest the Sino-Soviet Joint Petroleum Stock Company opened up several new wells in Sinkiang Province last year and restored many abandoned wells. It also began the construction of a new cracking plant and an engineering plant to increase the production of gasoline from crude oil. 80/ Although the exact location of these plants has not been announced, it is believed that they are located in the Wu-su oil fields, where Soviet engineers supervised the renovation of the former Wu-su oil refinery in 1952-53. 81/

In the Southwest, large-scale oil and natural gas prospecting was begun last year over an area of 23,000 square kilometers, with the aid of Soviet oil technicians and large quantities of oil drilling equipment obtained from the USSR, Rumania, and Eastern Germany. 82/

* It is estimated that approximately 500 tank trucks would be required to operate daily for 365 days a year to haul this increased amount of crude oil from Yu-men to Lan-chou.

Oil prospecting will be continued this year on a much larger scale and over an area five times larger than in 1953. Thus far, 6 petroleum deposit formations have been discovered, among which 4 have been confirmed as suitable for exploitation. 83/

In East China a state-operated oil refinery in Shanghai is being expanded to refine crude oil being shipped from the Yu-men oil fields in Kansu Province. This plant is expected to supply most of the civilian petroleum requirements in East China. 84/

In the Northeast, extensive survey operations are being conducted in search of additional shale oil deposits. Last year, the No. 1 shale oil refinery in Fu-shun expanded its production facilities to include the processing of diesel oil from oil shale. 85/ Rehabilitation of the No. 2 shale oil refinery, also in Fu-shun, was begun in May 1953 and is expected to be completed in June 1954. When completed, it will produce crude oil, diesel oil, gasoline, and a large quantity of ammonium sulphate. 86/ When three groups of distillation retorts in this plant are restored this year, the output of the shale oil industry in Communist China will be increased by 58 percent over 1953. 87/

E. Electric Power.

The Chinese Communists realize that the adequate development of the power industry is a critical factor in their planned industrial expansion. This realization was reflected as early as July and August 1950, when the Ministry of Fuel Industry sponsored a national hydraulic engineering conference in Peiping to discuss and develop a Five Year Plan for hydroelectric power development throughout Communist China. 88/ The importance of electric power to industrialization can also be seen in the fact that the Peiping regime managed to increase the production of electricity in Communist China from an estimated 4.4 billion kilowatt-hours in 1949 to about 9.1 billion kwh in 1953. 89/ Chou En-lai announced in September 1954 that production would reach an estimated 10.8 billion kwh in 1954. 90/ In order to fulfill the plan, Communist China began an ambitious construction and reconstruction program in 1952-53. On 16 February 1953, former Finance Minister Po I-po, in his report on the State Budget for 1953, stated that 9 steam plants would be built and that 3 hydroelectric plants and 12 steam plants would be expanded. 91/ In September 1953, reference was made to "24 thermal and hydroelectric stations" to be built or reconstructed in 1953 alone.

The Chinese Communists have concentrated on thermal rather than hydroelectric plants because the former can be built more quickly, cheaply, and easily than the latter. It appears likely from subsequent revised statements concerning goals 93/ that most of the plants scheduled for completion in 1953 in Po I-po's report will actually be completed in 1954.

1. Northeast.

An examination of the electric power construction program shows that the Chinese Communists appear to be concentrating their energies in the Northeast, at least in the first phase of their Five Year Plan. There are two good reasons for this. First, the Chinese Communists have chosen the Northeast as their primary base for development of heavy industry, and such industry is dependent upon an adequate supply of electric power. Second, a good part of the construction program in the Northeast actually consists of replacement of equipment which the USSR had removed in 1945. The Chinese Communist electrification program may well increase power output in the Northeast from almost 4 billion kilowatt-hours in 1952 to about 10 billion in 1957. 94/ The Russians have restored or are restoring equipment to a number of plants as well as furnishing equipment for some new plants. Among the principal plants involved are: the Ta-feng-men Plant, the Fou-hsin Plant, the No. 0170 (Fu-shun?) Power Plant, the No. 4 Harbin Plant, and the Dairen (Kan-ching-tzu) Plant. 95/ The Ta-feng-men Plant, the only hydroelectric station in the group, is believed to have received two 85,500-kilowatt generators from the USSR. It has also been reported that additional work will be accomplished in 1954. 96/ The Fou-hsin Plant, which has also been re-equipped with Soviet equipment, will reportedly be completed in 1956, when it is claimed that the plant will be capable of meeting the demands of a city of 1,500,000 people (or at least four times the present population of Fou-hsin). The capacity of the thermal plant at Fou-hsin will probably increase with the extension of coal mining in that area and with the establishment of other industries. 97/ It is reported that, late in 1952, a 20,000-kilowatt unit was installed at the Fou-hsin plant. This was to be followed by substantial increases in power equipment in 1953 and 1954. 98/ The No. 0170 Thermal Power Station (believed to be at Fu-shun), which has been referred to as "the largest in the Northeast," was reported to have been constructed with the "unparalleled friendship of the Soviet Union," which contributed the machinery and technical advisors. 99/ One

50,000-kilowatt generator was reportedly installed by March 1953, and another one was said to be planned for 1954. 100/ Comparatively little is known about the Harbin and Dairen (Kan-ching-tzu) power plants except that they both are being built under the "Soviet aid" construction programs. 101/ The 220-kilovolt (kv) transmission line connecting Dairen - Antung - Suiho (Sup'ung) - An-shan has been extended to Fou-hsin and to Mukden - Fu-shun - Pen-ch'i, increasing the capacity of interconnections in this area. 102/

2. China Proper.

While the need for increased electric power production in the Northeast is more immediate, the Chinese Communists are also engaged in an electric power construction and expansion program in the rest of Communist China which is apparently aimed at supporting various scattered industrial centers. Most of these electric power construction projects are smaller than the new or expanded ones in the Northeast, and their planned total capacity will not be so great. One of the most important of the plants under construction in China proper is the T'ai-yuan Thermal Power Plant, which will serve major industrial centers in North China. Work has begun on this Soviet-designed and Soviet-equipped plant in October 1953. 103/ It reportedly will be in partial operation by 1955 and in full operation by 1957. Output of the plant when completed will triple the electric power now generated in T'ai-yuan. 104/ A new 110-kv line is being erected in North China, connecting Peiping and Tientsin, which will supplement the existing 77-kv line. 105/ The Cheng-chou Thermal Power Plant in Honan Province reportedly has been expanded and reconstructed according to Soviet designs 106/ and was scheduled to begin "partial" operation in October 1953. 107/

The Chinese Communists have recently finished the No. 507 Thermal Power Plant in Chungking -- the chief industrial city in Southwest China -- which is described as "the biggest power plant ever built in Southwest China". 108/ Automatic Soviet equipment reportedly has been installed, and it had been stated that this plant, which began operations in April 1954, was estimated to have a capacity of approximately 12,000 kw. 109/ The Sian No. 2 Thermal Power Plant is one of two comparatively large electric power plants which are being built in Northwest China, the country's least developed region. Construction was reportedly begun in November 1952, and the plant was said to be in the first of three stages of operation about one year later. This plant, which was constructed

with Soviet equipment and technical aid, was believed to have a generating capacity of 10,000 kw. 110/ The other important increase in electric power in the Northwest has been contributed with the completion of the Ti-hua Thermal Power Plant in Sinkiang. This plant, which is said to have begun operation in December 1953, was designed by Soviet specialists and equipped with Soviet equipment, and is believed to have a 5,000-kw generator. 111/ There are several other plants in China proper now in the planning stage which will eventually play an important role in the Five Year Plan. The projected thermal power plant at Pao-t'ou is such a plant. It has been listed as one of the "Soviet aid" construction projects and probably is connected with the proposed iron and steel plant which is to be built at Pao-t'ou. 112/ One report simply states that it will be constructed before 1959. 113/

F. Engineering Industry.

The First Ministry of Machine Industry (FMMI) was established in September 1952 as one of the new ministries responsible for the development of the machine industry in Communist China. 114/ The other ministry is known as the Second Ministry of Machine Industry and is believed to be responsible for the ordnance industry. 115/ Inasmuch as there is very little reliable information on project construction under the latter ministry, this report will limit itself to considering the construction program of the First Ministry of Machine Industry. One of the reasons for the creation of both of these ministries, together with the Ministry of Construction Industry, was to facilitate planning and implementation of the huge industrial construction program which is part of the first Five Year Plan. 116/

In a directive issued by the First Ministry of Machine Industry (FMMI) in June 1953, it was stated that the machine-building industry, as the "heart of industry," would have to shoulder a major responsibility for the carrying out of the Five Year Plan. 117/ It was admitted in the same directive that the machine-building industry was not expected to provide more than a part of the equipment to meet the needs of the national construction program of the Five Year Plan. In April 1953 it had been acknowledged that the original plans of the FMMI had been over-ambitious and unrealistic, and consequently a number of projected construction works had been curtailed. It was further stated that the total construction area approved by the FMMI in the final plan was 66 percent of the original target for 1953. 118/ It will be recalled also that there

were several revisions in the production targets for 1953, and that the February goal for machine tool production was reduced by 21.9 percent in May -- the largest of all the revisions. 119/ Chou En-lai, in his speech of 23 September 1954, estimated production of metalworking machines in 1954 at 13,513 units, or 8.5 times the level of 1949. 120/ In May 1954 the FMMI was conspicuous by its absence from a list of the ministries which had completed their "first quarter basic construction plans by 10 percent or better." 121/

About 46 percent of planned investment for "National Economic Construction" in 1953, or 47,633.8 billion yuan, was allocated to industry. 122/ A significant proportion of this is believed to have gone into the machine-building industry. It was stated in July 1953 that investment in basic construction by the FMMI was 2.8 times the amount invested in 1952. 123/ The importance of the FMMI's construction program under the Five Year Plan was further stressed in an article in the Soviet press which stated that, among the 141 construction and reconstruction projects which would receive Soviet aid during the Chinese Communist Five Year Plan, there would be projects involving the production of motor vehicles, tractors, ballbearings, turbines, generators, lathes, and mining equipment. 124/ The completion of all of these projects and many more will mean unprecedented progress for Communist China in its present program of industrialization.

1. Northeast.

In accordance with the apparent plan of the Chinese Communists to industrialize this region first, most of the more important projects of the FMMI which are being constructed, expanded, or renovated under the Five Year Plan are in the Northeast. For example, 8 of the 10 large plants under that Ministry which were being built or renovated in 1953 were located in the Northeast. 125/ A list of major project constructions of the FMMI in the Northeast, together with brief pertinent particulars, as described in the Chinese Communist press, follows.

a. Mukden.

Four of the six major renovation and expansion projects are located in this city. (1) The No. 1 Northeast Machine Tool Plant (also known as the Mukden Lathe Factory), which will produce high-speed heavy machine tools, including up-to-date lathes,

planers, and millers, is being equipped with Soviet, Czechoslovak, and East German machinery. It is scheduled for full completion in 1955. 126/ (2) The No. 2 Northeast Machine Plant, better known as the Mukden Heavy Machinery Factory, which is described as the "largest of its kind in China," is being expanded with equipment from the Soviet Bloc. 127/ This plant, which is in partial operation, is already producing huge crushers and other heavy machinery. 128/ (3) The Mukden Pneumatic Tool Plant, already in partial operation, is being renovated along Soviet lines and is being equipped with Soviet machinery. By August 1953 it had already produced 800 Soviet-designed rock drills. 129/ Besides rock drills, this plant will eventually manufacture riveting machines and pneumatic picks and hammers "for bridge building, shipbuilding, and heavy mining work." 130/ (4) The Northeast No.7 Electrical Machinery Factory, an electric wire and cable plant, is being expanded with the latest Soviet machinery, so that it will eventually manufacture 25 different kinds of products. 131/ When completed in 1955 this plant will be the largest of its kind in Communist China and will produce about two-thirds of the wire and cable in the country. 132/

b. Harbin.

This city is rapidly becoming another industrial center in the Northeast with the erection of two of the new major plants which were begun in 1953. The Northeast Precision Measuring and Cutting Tool Plant, which will be the first plant of this type in Communist China, is being built under Soviet supervision and is being equipped with automatic precision machine tools from the USSR. 133/ When this plant goes into operation in the autumn of 1954, it will produce more than 80 kinds of precision cutting and measuring tools as well as tools for testing machines. 134/ The Northeast No. 4 Electrical Machinery Plant, apparently a large-scale enlargement of an existing plant, will be the largest of its kind in the country. This plant, which is being built with Soviet technical assistance, was begun in May 1953, but will not go into operation until 1955, when it will produce large medium-sized hydro- and thermo-turbine generators. 135/ Besides these two major plants, which were begun in 1953, Harbin is also the site for two other plants on which construction was started in 1954. The Harbin Electric Meter Plant, which will be the largest of its kind in Communist China, is also being built with Soviet aid. This plant, which is scheduled to go into operation in 1956, will produce voltmeters, potentiometers, and other types of electric meters. 136/ The Harbin Boiler Plant, which is also being built with Soviet assistance, will produce large

numbers of high-pressure boilers when completed. 137/

c. Other Locations.

The Fu-shun Mining Machinery Plant and the No. 1 Automobile Plant represent the remaining 2 of the 8 large plants in the Northeast on which work was begun in 1952. The Fu-shun Mining Machinery Plant is being reconstructed and expanded so that, when completed, it will more than triple its present output. This plant, which is already producing Soviet-designed mining drills, will manufacture modern mining machinery, including electrical excavators, of all types, pumps, and 150-ton electric shovels. 138/ The No. 1 Automobile Plant (also referred to as the No. 625 Automobile Factory), the most publicized of the construction projects, is located at Ch'ang-ch'un, midway between Harbin and Mukden. This plant, described as the first automobile plant in Communist China, reportedly will cover an area of 150 hectares (370.65 acres). 139/ The No. 1 Automobile Plant, which was designed in the USSR, will be entirely equipped with up-to-date equipment from the USSR, Czechoslovakia, and other Soviet Bloc countries and will use advanced Soviet techniques. 140/ Construction was begun in July 1953, and the plant is scheduled to begin production of some automotive parts, as well as equipment and tools for the plant itself, in 1954. 141/ It is believed the plant will manufacture Soviet-type trucks. The planned production capacity of the plant is reported to be 30,000 vehicles annually. 142/

2. China Proper.

Although the Northeast contains most of the FMMI construction projects now being erected, several important engineering industry plants for future industrialization are being built in China proper. A listing of these major project constructions of the FMMI in China proper, with brief pertinent particulars, as described in the Chinese Communist press, follows.

Three of the major construction projects of the FMMI in China proper are located in North China, and two of these are situated in T'ai-yuan. One is still under construction, and the other was recently completed. The T'ai-yuan Heavy Machinery Plant, which was 1 of the 10 large factories under construction in 1953 and has been called "China's first heavy machine building plant," will produce equipment for rolling mills, coking, and metallurgical plants, as well as various types of cranes. 143/ This plant, which is being built

with Soviet technical assistance, has begun partial production and is scheduled to be fully completed in 1955. 144/ Such a factory in the T'ai-yuan industrial complex is well situated to aid in the development of heavy industry in Shansi and Suiyuan, provinces which contain large deposits of iron and coal. A large plant recently completed in T'ai-yuan is the Ching-wei Textile Machinery Factory, which is described as the biggest and first modern textile machinery plant in Communist China. 145/ This plant, which was completed last December, after two and one-half years of work, will be able to turn out spinning frames with 200,000 spindles annually by operating only one shift daily. This plant is well located near the cotton-producing areas of Shansi, Shensi, and Hopei Provinces, where new textile centers are being built. 146/ Peiping is the center for a large building program this year. Although most of the buildings will be for government offices and schools, there will also be some industrial projects. One of these is the third large engineering industry construction project in North China, the Peiping Machine Tool Factory. Work on this plant, which is scheduled to produce universal and other milling machines, apparently has not begun yet. 147/ Less important factories under construction or expansion include the North China Agricultural Machinery Factory, the Chang-shih-tien Machinery Works, and the Feng-t'ai Railroad Bridge Works. 148/

In Central and South China the major project construction activity of the FMMI is located in Hsiang-t'an, Hunan Province. The two large plants in this city, which is rapidly becoming industrialized, are the Central and South Electric Works and the Central and South Lathe Factory. The Electric Works plant, which is being expanded into one of the largest of its kind in Communist China, will eventually go into large-scale production of switches, transformers, power generators, and electric meters. A subsidiary, the Central and South China Electric Wire Factory, is being built nearby to supply it with wire. 149/ The other large plant, the Central and South Lathe Factory, which was still in the blueprint stage in July 1953, will become the most up-to-date lathe factory in Central and South China. 150/

In Southwest China the major construction project of the engineering industry in 1953 was the Ch'eng-tu Railroad Workshop. This plant, which was begun in October 1951 and was basically completed in November 1953, will repair and assemble locomotives for the growing railroad network in Southwest China. 151/ The Ch'eng-tu

Railroad Workshop is centrally located, so that at present it will service only the Ch'eng-tu - Chungking Railroad; but with the completion of the Ch'eng-tu - Pao-chi Railroad and the Chungking - K'un-ming Railroad, it will be able to service these two lines as well. The Chungking Air Compressor Plant is one of the more important plants which have been renovated in Southwest China. This plant, which was formerly a textile mill repair shop, began producing air compressors used in pneumatic tools in January 1954. 152/

In Northwest China the only major project construction of the FMMI in 1953 was the Shih-yeh Automobile Repair and Assembly Plant, which is located in the vicinity of Urumchi (Ti-hua), Sinkiang. This plant, which was begun in June 1950 and went into operation in July 1953, has such major shops as parts manufacture, body works, assembly, and paint spraying. It received modern equipment from the USSR, and Soviet technicians supervised the construction. Its completion is important because Sinkiang is dependent on motor vehicles for transportation. 153/

G. Railroad Construction.

T'eng Tai-yuan, Minister of Railroads, in his report to the Government Administrative Council in October 1953, stated that the fundamental task of the Chinese Communist railroads under the Five Year Plan is to fulfill their transportation mission so that they will serve the needs of national construction, in order to promote the industrialization of the nation and the modernization of national defense. He stressed the fact these goals can be accomplished not only by making the most of existing facilities but also by building new railroad lines to support "new industrial and national defense bases." 154/

In 1953, the first year of their Five Year Plan, the Chinese Communists constructed 589 kilometers of new rail lines, or 20 percent more than they had built in 1952. In addition, 400 kilometers of branch lines for factories and mines were laid -- a significant addition in the industrialization program -- and 140 kilometers of line were double-tracked. 155/ It is expected that the amount of track laid annually will be increased. In 1954, 603 route kilometers of railroad are to be constructed. 156/ The completion of the An-shan Rolling Mill in Northeast China late in 1953 will supply the needs of Communist China for steel rails for railroad construction during the Five Year Plan. 157/

Most of the new lines under construction or survey are in Southwest and Northwest China. (See the map inside back cover.) The two main lines now under construction are the Ch'eng-tu - Pao-chi Railroad, which is scheduled to go into operation in 1955 and will connect the Southwest and Northwest areas; and the Lan-chou - Sinkiang Railroad, which the Communists plan eventually to extend to the Kazakh SSR of the USSR via Urumchi (Ti-hua). 158/ This latter railroad, which is 1,700 miles long, will serve to connect Sinkiang more closely to China proper, in addition to supplying another rail link with the USSR. The development of the Yu-men oilfields will be hastened with the advance of the railroad. 159/

There are several railroads under active survey. One of the most important of these in the Southwest is the Ch'eng-tu - K'un-ming Railroad. 160/ This line, when built, will aid in the development and exploitation of Yunnan Province, which is rich in nonferrous metals. There are reports of plans for a railroad to run from Pao-t'ou in Suiyuan Province through Outer Mongolia. 161/

Of major importance to the Chinese Communist construction program is the Yangtze River Bridge, on which work was recently begun. This bridge will span both the Han and Yangtze Rivers at Hankow and will serve to speed north-south traffic. Work on the 987-foot Han River Bridge was started in November 1953; while construction on the 3,297-foot Yangtze Bridge, which is to be a double-deck, double-track bridge, is to start late in 1955. 162/ "Twenty-five experts and professors" reportedly aided in the planning of the bridge. 163/ It is pointed out in the Communist press that this bridge, when completed, will play an important role in the future industrialization of Central and South China. 164/

H. Chemical Industry.

In 1953, in view of the ever-increasing demands for chemicals for the industrialization program, the Chinese Communists endeavored to expand the production facilities of certain strategic chemical plants already in operation, rather than invest huge sums of money, time, and labor in the construction of new plants. The major areas of chemical industrial expansion were centered principally in Northeast and East China.

1. Northeast China.

Expansion of the production facilities of the Dairen Chemical Works and the Dairen Soda Plant -- which form the largest chemical combine in the Northeast -- was started in 1953 and is expected to be completed by 1956. The major emphasis is believed to be concentrated on increasing the production of synthetic ammonia, sulphuric acid, ammonium sulphate, and caustic soda, all of which are indispensable for the expansion of industry and agriculture in Communist China. 165/

Restoration and development of the Chin-hsi Chemical Plant in Liaosi Province has continued steadily since 1949, when this plant was converted into a chemical factory after being originally operated as an oil refinery. Among the subsidiary plants of the Chin-hsi Chemical Plant, which were completed and put into operation last year, were a mercury-electrolyzing plant and a carbolic acid plant. In addition, a liquid chlorine plant was ready to be put into operation by the end of 1953. Among the chemicals now being produced at this plant are caustic soda, bleaching powder, monochlorobenzene, and hydrochloric acid. 166/

In Mukden, expansion of the new Northeast Pharmaceutical Plant included the installation of new equipment to produce the antibiotic chloromycetin and the construction of new plant facilities to increase the production of sulphur drugs. This plant is being mechanized and will be completed by 1956. 167/

2. East China.

One of the largest chemical plants in Communist China, the Yung-li Chemical Works, expanded its production capacity of ammonium sulphate fertilizer by the addition of a sulphuric acid plant and the expansion of a synthetic ammonia plant. 168/ The addition of these new plants is expected to increase annual production of ammonium sulphate at Yung-li by 22 percent, from an estimated 60,000 tons in 1953 to approximately 72,000 tons in 1954. 169/

In Anhwei Province a phosphate fertilizer works is now under construction near Feng-t'ai, where rich mineral apatite deposits have been located. Chinese Communist geologists have confirmed that the deposits are near enough to the surface to permit

opencut mining of calcium superphosphates. The deposits are reportedly large enough to keep a plant with daily capacity of 50 tons of phosphate fertilizer in operation for more than 20 years. 170/

In Kiangsu Province, Shanghai pharmaceutical plants are being expanded to include the production of antibiotics. In August 1953 the first large penicillin factory in Communist China was completed and put in operation in Shanghai. 171/

3. North China.

In Shansi Province the T'ai-yuan Chemical Works expanded its production facilities by increasing its oxygen production capacity by 51 percent, through the addition of a new 10-unit pressure machine. This plant is supplying industrial chemicals to the T'ai-yuan Steel Plant and the newly built T'ai-yuan Heavy Machine Works. Also in Shansi Province a fertilizer plant with a yearly production of 50,000 tons of phosphorous fertilizer was in the early construction stage. 172/

4. Southwest China.

This year a new phosphate fertilizer plant was completed and put into operation in Kweichow Province. It is estimated that this plant will produce about 10,000 tons of phosphate fertilizer per year. 173/

A new mechanized salt plant is under construction in Tze-lie-tsing in Szechuan Province, which is the main source of salt in Southwest China. Its salt production is expected to be about 36,000 tons per year. 174/

5. Northwest China.

A sulphuric acid plant was under construction in Lan-chou last year, with an expected completion date of October 1954. However, there is no information available concerning its planned capacity. 175/

6. Inner Mongolia Autonomous Region.

In Suiyuan Province a new caustic soda plant was completed and put into operation last year. However, there is no information available concerning its production capabilities. 176/

I. Cement Industry.

The construction program under the Five Year Plan will require increasingly large quantities of cement. Besides the construction of factories, much cement will be required for the building of roads, bridges, airfields, and military defense installations, as well as for river conservation and other similar projects. Because of this fact the Peiping regime has been making strenous efforts to increase substantially production of this basic strategic commodity. It is significant that, when the original 1953 targets were revised in May of that year, the goal for cement production was the only one which was increased. It was raised from an original increase of 17 percent over the 1952 figure to almost 30 percent. It might be assumed that those responsible for the original cement production targets were the only ones who did not overestimate their production capabilities. It appears more probable that the increased cement production target was the result of the very high production priority of this commodity in over-all economic planning. Based on an estimated production figure of 2,250,000 tons in 1952, a 30-percent increase, announced as the revised target for 1953, would have meant a goal of almost 3,000,000 tons of cement in 1953. 177/ Although no specific claims of achievement are available, the Ministry of Heavy Industry, which is responsible for cement production, declared that the production targets for this commodity had been exceeded in 1953. 178/ According to the speech of Chou En-lai on 23 September 1954, output of cement in 1954 is expected to be 4.73 million tons, or 7.2 times the level of 1949. 179/

The figures cited for production of cement in 1952 and the target for 1953 do not appear to be unrealistic in view of evidences of increased cement plant construction and renovation since 1951. At least one cement plant in Northeast China underwent reconstruction in 1953. This was the Northeast No. 8 Cement Plant at Harbin, which went into production in September. 180/ At least one other plant in the Northeast, the Harbin Cement Works, is marked for expansion in 1954. Upon completion of this plant in April 1955, its annual output will be increased 80 percent, which would be "sufficient to meet the needs in the construction of 51 plants similar to the Harbin Electrical Appliance Factory." 181/ During the war there was a total of 14 cement plants operating in Northeast China with a total

yearly capacity of 2 million tons, but by 1946 the capacity of six of them had been reduced to nil by the removal of equipment to the USSR, and in many others the production was severely curtailed. 182/ The large factories at Chin-hsi and Fu-shun were restored in 1950, and those at Dairen, An-shan, and Lueh-yang were reported to be in full production soon after the Communists assumed control in 1948. 183/ The Chinese Communist press and radio have identified at least eight cement plants in operation in Northeast China. In view of this and of the instances cited of recent plant reconstruction and expansion, it is believed that Soviet aid has been considerable in the rehabilitation of the cement industry in the Northeast.

In 1949 there were at least 20 factories in China proper with a theoretical capacity of 2 million tons annually. Actual production was considerably below this, because all the machinery in these plants was not in working order. Since 1949 the Chinese Communists have reported that six new factories have been completed or are under construction, most of them in the Northwest. 184/ However, besides now plant construction there also has been considerable expansion of old plants. The Szechwan Cement Plant in Chungking, for instance, with the completion of a new kiln was scheduled to triple its production in 1953, 185/ as compared with 1952. The addition of a new kiln at the Sichuan Cement Factory near Canton was to increase production at that plant by 30 percent. 186/ The Canton area was also the site for the construction of a new plant which was scheduled to go into operation before the end of 1953. 187/ Four cement plants are believed to have been completed in the Northwest area as part of the industrialization program, and others have been reported under construction. These plants in the Northwest area include minor factories at Yung-teng and Tsao-t'ang, at Lan-chou, as well as more important ones near Urumchi (Ti-hua), Sinkiang Province. 188/

In view of the evidence of the high priority allocated to cement production, both as reflected in official production goals and as seen in the known needs for cement under the Five Year Plan, it is believed that cement plant construction, reconstruction, and expansion will continue for some years to come. The rate of expansion, however, will be dependent largely upon shipments of cement plant equipment from the USSR and from the European Satellites.

J. Textile Industry.

The bulk of basic construction work in the textile industry is being concentrated on the establishment of new textile mills in the cotton, woolen, and flax-producing areas of the Central and South, the Northwest, North China, and the Northeast, with emphasis on shifting the focus of textile production from the coastal areas to the interior. 189/ Hitherto, between 80 percent and 90 percent of cotton textile production capacity has been concentrated in the Shanghai, Tientsin, and Tsingtao areas. In the past 3 years, however, 21 textile mills and dyeing and printing plants have been either newly constructed or expanded in areas close to the supply of raw materials. 190/

By the end of the current Five Year Plan, the textile industry is expected to be expanded by more than 50 percent. Achievements thus far in 1954 have been led by the completion of the Ching-wei Textile Machinery Plant in T'ai-yuan, which is now the largest textile machinery plant in Communist China, and which is now capable of producing about 40 percent of the present output of textile machines. 191/ Since 1950, Communist China has added about 1 million spindles to its expanding textile industry, and by the end of 1954, total spindlage in operation should be close to 6 million. 192/ In the past year and a half, new construction was started and, for the most part, was completed on 8 cotton mills, 3 woolen mills, 2 flax mills, 3 gunny sack plants, 2 silk mills, and 6 dyeing and printing factories. In addition, the construction of four large new cotton mills in Peiping, Sian (Shensi Province), Shih-chia-chuan (Hopei Province), and Cheng-chou (Honan Province) will be started before the end of 1954. 193/

As a result of such expansion, it is estimated that Communist China will produce over 600,000 tons of cotton yarn and about 2,200 million meters of cotton cloth annually by the end of 1957.

III. Industrial Training.

A. Technical Education.

One of the most serious weaknesses of the Five Year Plan for industrial development of Communist China has been the

shortage of qualified technical personnel. Communist authorities, fully aware of this dearth of skilled manpower, have attempted to remedy the situation by reshaping the educational structure of the country to expand the output of technicians rather than scholars.

The reorganization of the educational structure was begun in 1952, and the total number of institutes of higher learning was reduced from 201 to 182. The latter consisted of 14 comprehensive universities, 39 institutes of technology, 31 teachers' colleges, 29 agricultural colleges, 29 medical colleges, 4 colleges of political science and law, 6 colleges of finance and economics, 8 institutes of languages, 15 institutes of arts, 5 institutes of physical culture, and 2 minority nationality colleges. 194/ This reorganization has also resulted in the adoption of a new teaching system, whereby technical subjects have been broken down to about 100 specialties . Each subject concentrates on a particular branch of engineering, so that the student, upon completion of his studies, becomes relatively proficient in that particular field. This new teaching system is intended to combine theory with practice by the use of pilot workshops and laboratories to supplement classroom studies. In 1953 these institutes graduated 41,000 students, of whom 14,000 were engineering students. At the present time, there are approximately 80,000 students enrolled in engineering courses at the institutes of higher learning. 195/

In addition, over 200 short-term technical schools have been set up throughout Communist China, under the direction of the Ministries of Heavy Industry, First Machine Industry, Fuel, Geology, Communications, and Railroads, to train technical personnel for the specialized fields of geology, metallurgy, topographic surveying, communications, and transportation. The length of these courses varies from 6 months to a year, as compared with the 3- and 4-year courses given at the institutes of higher learning. It is estimated that approximately 110,000 industrial technicians 196/ are now being trained in the following areas of Communist China: 65,000 in the Northeast, 197/ 20,000 in the East, 13,000 in the North, 198/ 5,000 in the Southwest, 199/ 4,000 in the Central and South, 200/ and 3,000 in the Northwest. 201/

The purpose of these technical schools apparently is to

to satisfy the current industrial demand for skilled technicians, while the purpose of the higher institutes of learning is to satisfy long-range comprehensive technological manpower needs. Although the Communist authorities have announced their intentions to increase the number of institutes of technology and lower level technical schools, it is quite possible that the quality of these technical courses is being greatly impaired by the present shortage of skilled teachers. This situation is being further complicated because the Communist authorities require that their technicians be both technically competent and ideologically sound. This combination has been difficult to find because the best trained technical workers inevitably have been trained in Europe or the US and are more likely to become discontent. On the other hand, the most reliable party men quite often have been impressionable youngsters, emotionally flushed with the new nationalism, poorly educated, and without the intellectual acumen to become well educated. 202/

B. On-the-Job Training.

The next most important means of acquiring trained industrial personnel is that of training workers on the job. The An-shan Steel Company is the best example of this type of training, since it has established a 5-year plan to train 30,000 of its workers and about 5,000 of its technicians. Training in more than 90 different industrial skills is being offered under this plan. 203/ Under this current training program, a worker with 3 years of industrial experience and a minimum of education is expected to become a technician after completing a special training course of from 15 to 18 months. 204/ The fulfillment of this plan is expected both to fill the need for skilled manpower required for production and construction in An-shan and also to provide a reserve force of skilled technical workers for use in other newly constructed iron and steel works throughout the country. In 1953 several hundred were sent to Chungking to assist in the expansion of the Chungking Iron and Steel Company. 205/

C. Soviet Technology in China.

Since most of the intricate machinery and equipment imported by Communist China in the past few years has been predominantly of Soviet design, it is quite natural that Soviet

engineers and technicians would be required to install it and to train Chinese workers to use it. In 1953 it was reported that more than 2,400 Soviet technical advisors were attached to Chinese cultural and economic agencies. 206/ Although most Soviet industrial engineers and technicians in Communist China have apparently been engaged in factories training on-the-job workers, some have become affiliated with certain technological institutes, which are in turn closely associated with neighboring industrial enterprises. One such institute is the Harbin Industrial Institute, the student body of which now numbers over 4,000. 207/ Here Soviet technical advisors have supervised the establishing of 24 teaching research offices which coordinate and conduct the institute's teaching activities, which in turn are designed to train Chinese industrial plant supervisors and instructors and industrial college teaching assistants. After 3½ years of intensive study, 208/ graduates of this college are expected to be adept in all phases of industrial production and to be capable of drawing up improved factory designs and intricate machinery specifications. 209/

D. Training in the USSR.

The last method of industrial training is that reserved for the most "progressive" Chinese Communist workers, technicians, and industrial college students. In April 1953 the first group of 40 Chinese foremen and workers returned to the An-shan Steel Company from the USSR, after 7 months of training in the Soviet techinque of manufacturing seamless steel pipes. In August 1953 another group of 37 Chinese technicians and workers returned to the An-shan Steel Company, after a year's study at the Nizhniy Tagil steel mills in the Urals. There they learned Soviet technology and methods of steel rolling and also the processing of numerous administrative details entailed in directing the production of an entire department of a steel plant. These two groups from An-shan gained enough practical experience from their first-hand observation of operations in Soviet steel mills to be able to form the backbone of the crews now operating the new An-shan seamless steel tubing mill and the An-shan heavy rolling mill. 210/

In November 1953 a party of 68 skilled workers, technicians, and administrative staff members from the machine-building industry in the Northeast left for the USSR to acquire

firsthand experience in the operation and management of automatic production. There they are specializing in the production of ball bearings, pneumatic tools, and machine tools. After their return to Communist China, they will be expected to form the nucleus of skilled technicians required to operate factories and plants now under construction. 211/

By the end of 1953, more than 1,000 Chinese Communist college students were doing advanced study in the USSR, preparatory to returning to Communist China to take responsible positions in the fields of industry, science, and education. 212/

In spite of this greatly accelerated program of industrial training, the need for skilled industrial manpower still is not being satisfied. This is due primarily to an overly ambitious program, which called for the absorption of Soviet methods and techniques and, simultaneously, a substantial expansion of industrial production. Since years of training and experience are required to transform an average unskilled worker into a skilled technician or engineer, it appears unlikely that China will acquire a sufficient skilled labor pool before the end of the current Five Year Plan.

APPENDIX

SOURCES

Evaluations, following the classification entry and designated "Eval.," have the following significance:

Source of Information	Information
Doc. - Documentary	1 - Confirmed by other sources
A - Completely reliable	2 - Probably true
B - Usually reliable	3 - Possibly true
C - Fairly reliable	4 - Doubtful
D - Not usually reliable	5 - Probably false
E - Not reliable	6 - Cannot be judged
F - Cannot be judged	

"Documentary" refers to original documents of foreign governments and organizations; copies or translations of such documents by a staff officer; or information extracted from such documents by a staff officer, all of which may carry the field evaluation "Documentary."

Evaluations not otherwise designated are those appearing on the cited document; those designated "RR" are by the author of this report. No "RR" evaluation is given when the author agrees with the evaluation on the cited document.

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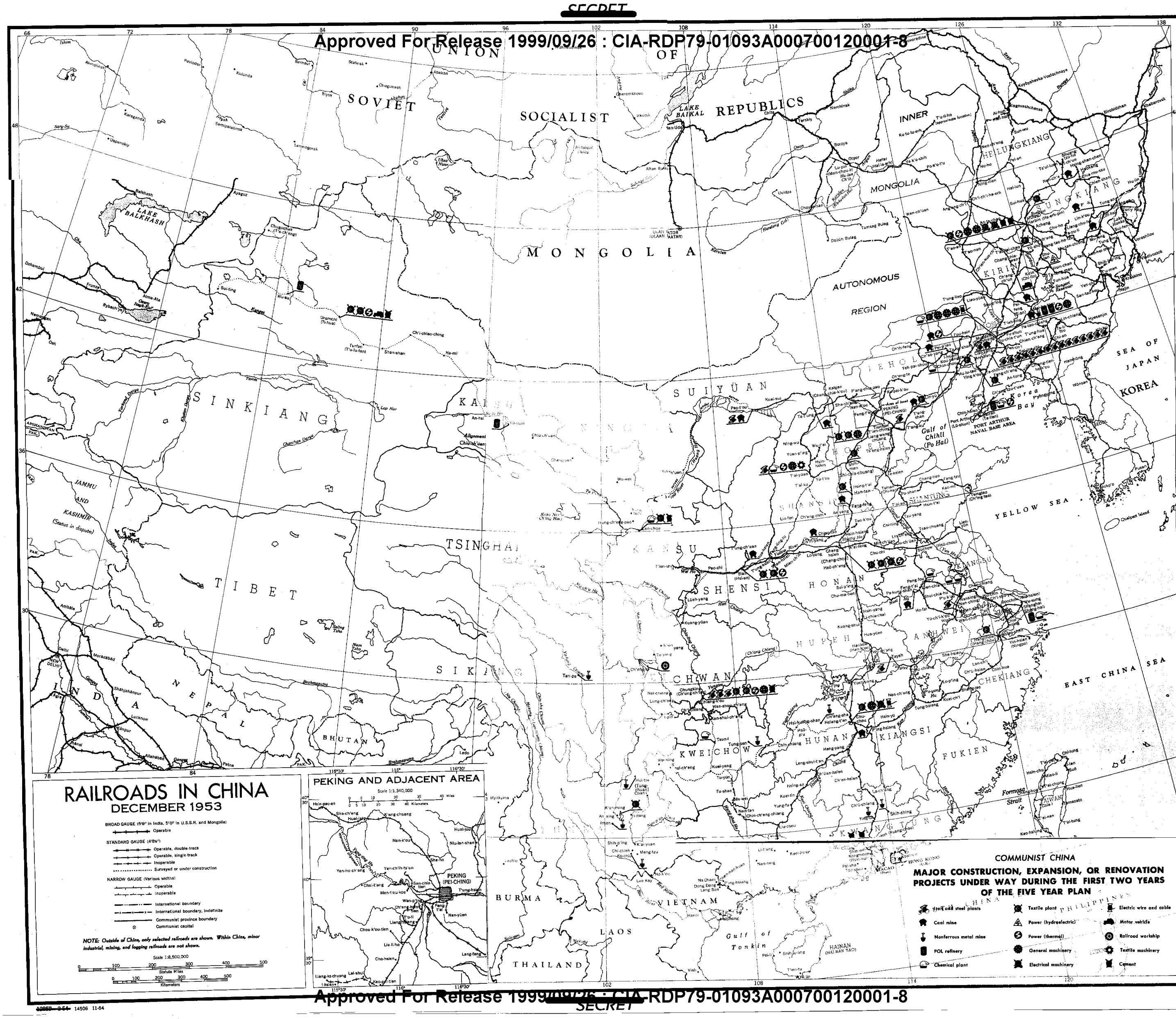

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